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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,492	01/23/2004	Fredric R. Bloom	IVGN 347	4921

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EXAMINER	
HINES, JANA A	

ART UNIT	PAPER NUMBER
1645	

MAIL DATE	DELIVERY MODE
09/03/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/762,492	BLOOM ET AL.	
	Examiner	Art Unit	
	JaNa Hines	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 June 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-14,77-79 and 108-117* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-14,77-79 and 108-117* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *6/18/09*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 18, 2009 has been entered.

Claim Status

2. Claims 1, 15-76 and 80-107 are cancelled. Claims 2-14, 77-79 and 108-117 are under consideration in this office action.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on June 18, 2009 was filed. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Withdrawal of Rejections

4. The rejection of claim 2-14, 77-79 and 108-117 under 35 U.S.C. 102(b) as being anticipated by Bloom et al., (WO 00/78925 dated December 28, 2000) has been withdrawn in view of applicants' arguments and evidence.

Response to Arguments

5. Applicant's arguments with respect to claims 2-14, 77-79 and 108-117 have been considered but are moot in view of the new ground(s) of rejection.

New Grounds of Rejection

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 2-14, 77-79 and 108-117 are rejected under 35 U.S.C. 102(b) as being anticipated by Short et al., (US Patent 5,510,099 published April 23, 1996).

The claims are drawn to an isolated *Escherichia coli (E. coli)* having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, wherein said isolated *E. coli* does not contain genetic material of bacteriophage Wphi. The claims are also drawn to an isolated *E. coli* having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, wherein said isolated *E. coli* are does not contain genetic material of bacteriophage Mu.

Short et al., teach a prolysogenic microorganism contains an isolated bacteriophage cI gene operably linked to expression control elements (col. 15, lines 19-25). Preferably the microorganism is a strain of *E. coli* (col. 15, lines 26-28). The

prolysogen is phage-free, i.e., is free of genetic material recoverable via a bacteriophage packaging extract (col. 15, lines 46-48). Preferably the strain of *E.coli* is deficient in one or more of the mcrA, mcrB, mrr, hsdR restriction systems and the like (col. 15, lines 49-52). Short et al., teach no restriction systems found in *E.coli* K12 (col. 15, lines 52-54). The SCS-8 commercially available *E.coli* strain has the following genotype: recA1, endA1, mcrA, Δ(mcrBC-hsdRMS-mrr), Δ(argF-lac)U169, phi80ΔlacZΔM15, Tn10(tet^r) (col. 28, lines 61-64). SCS-8 provides the lacZΔM15 gene which allows for alpha-complementation (col. 28, lines 64-66). The ΔM15 portion of lacZ gene provided by the host is provided either episomally via a low copy number plasmid or F-factor or stably integrated into the bacterial chromosome (col. 29, lines 50-53). By removing these restriction systems, rescue efficiencies have been increased up to at least 12,000 pfu/ug genomic DNA (col. 26, lines 25-27). Of course, one skilled in the art will recognize that "removal" of these restriction systems may be effected by deleting or inhibiting the activity of these restriction systems and the term "restriction system deficient" systems includes, but is not limited to, removal of the restriction systems; additionally naturally occurring strains of *E.coli* that are deficient in these systems may be isolated and used (col. 26, lines 24-34). Table 1 shows rescue efficient using *E.coli* strains with different restriction genotypes including *E.coli* C (col. 26-27, lines 57-14). Short et al., teach a phage-free, prolysogenic strain of *E. coli* (see claim 7).

Since the Patent Office does not have the facilities for examining and comparing applicants' isolated *E. coli* with the isolated *E. coli* of the prior art reference, the burden is upon the applicants to show an unobvious distinction between the material structural

and functional characteristics of the claimed peptide of the prior art. See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al., 205 USPQ 594.

Thus Short et al., teach the claimed invention.

7. Claims 2-14, 77-79 and 108-117 are rejected under 35 U.S.C. 102(b) as being anticipated by Short et al., (US Patent 5,955,056 published September 21, 1999).

The claims are drawn to an isolated *Escherichia coli (E. coli)* having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, wherein said isolated *E. coli* does not contain genetic material of bacteriophage Wphi. The claims are also drawn to an isolated *E. coli* having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, wherein said isolated *E. coli* are does not contain genetic material of bacteriophage Mu.

Short et al., teach a prolysogenic microorganism contains an isolated bacteriophage cI gene operably linked to expression control elements (col. 15, lines 4-7). Preferably the microorganism is a strain of *E.coli* (col. 15, line 13). The prolysogen is phage-free, i.e., is free of genetic material recoverable via a bacteriophage packaging extract (col. 15, lines 30-33). Preferably the strain of *E.coli* is deficient in one or more of the mcrA, mcrB, mrr, hsdR restriction systems and the like (col. 15, lines 33-39). Short et al., teach no restriction systems found in *E.coli* K12 (col. 15, line 38-39). The SCS-8 commercially available *E.coli* strain has the following genotype: recA1, endA1, mcrA, Δ(mcrBC-hsdRMS-mrr), Δ(argF-lac)U169, phi80ΔlacZΔM15, Tn10(tet^r) (col. 28, lines

44-49). SCS-8 provides the lacZΔM15 gene which allows for alpha-complementation (col. 28, lines 47-49). The ΔM15 portion of lacZ gene provided by the host is provided either episomally via a low copy number plasmid or F-factor or stably integrated into the bacterial chromosome (col. 29, lines 32-35). By removing these restriction systems, rescue efficiencies have been increased up to at least 12,000 pfu/ug genomic DNA (col. 26, lines 14-18). Of course, one skilled in the art will recognize that "removal" of these restriction systems may be effected by deleting or inhibiting the activity of these restriction systems and the term "restriction system deficient" systems includes, but is not limited to, removal of the restriction systems; additionally naturally occurring strains of *E.coli* that are deficient in these systems may be isolated and used (col. 26, lines 16-23). Table 1 shows rescue efficient using *E.coli* strains with different restriction genotypes including *E.coli* C (col. 26, lines 45-63). Short et al., teach a phage-free, prolysogenic strain of *E.coli* (see claim 12d).

Since the Patent Office does not have the facilities for examining and comparing applicants' isolated *E. coli* with the isolated *E. coli* of the prior art reference, the burden is upon the applicants to show an unobvious distinction between the material structural and functional characteristics of the claimed peptide of the prior art. See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al., 205 USPQ 594.

Thus Short et al., teach the claimed invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 2-14, 77-79 and 108-117 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a written description rejection.

The MPEP states that the purpose of the written description requirement is to ensure that the inventor had possession, as of the filing date of the application, of the specific subject matter later claimed by him. The courts have stated:

"To fulfill the written description requirement, a patent specification must describe an invention and do so in sufficient detail that one skilled in the art can clearly conclude that "the inventor invented the claimed invention." *Lockwood v. American Airlines, Inc.*, 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (1997); *In re Gostelli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) (" [T]he description must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed."). Thus, an applicant complies with the written description requirement "by describing the invention, with all its claimed limitations, not that which makes it obvious," and by using "such descriptive means as words, structures, figures, diagrams, formulas, etc., that set forth the claimed invention." *Lockwood*, 107 F.3d at 1572, 41 USPQ2d at 1966." *Regents of the University of California v. Eli Lilly & Co.*, 43 USPQ2d 1398.

The MPEP lists factors that can be used to determine if sufficient evidence of possession has been furnished in the disclosure of the Application. These include "level of skill and knowledge in the art, partial structure, physical and/or chemical properties, functional characteristics alone or coupled with a known or disclosed correlation between structure and function, and the method of making the claimed invention.

Disclosure of any combination of such identifying characteristics that distinguish the claimed invention from other materials and would lead one of skill in the art to the conclusion that the applicant was in possession of the claimed species is sufficient." MPEP 2163.

Further, for a broad generic claim, the specification must provide adequate written description to identify the genus of the claim. In *Regents of the University of California v. Eli Lilly & Co.,* the court stated:

"A written description of an invention involving a chemical genus, like a description of a chemical species, 'requires a precise definition, such as by structure, formula, [or] chemical name,' of the claimed subject matter sufficient to distinguish it from other materials. *Fiers*, 984 F.2d at 1171, 25 USPQ2d at 1606; *In re Smythe*, 480 F.2d 1376, 1383, 178 USPQ 279, 284-85 (CCPA 1973) ("In other cases, particularly but not necessarily, chemical cases, where there is unpredictability in performance of certain species or subcombinations other than those specifically enumerated, one skilled in the art may be found not to have been placed in possession of a genus. . . ."). *Regents of the University of California v. Eli Lilly & Co*., 43 USPQ2d 1398.

The MPEP further states that if a biomolecule is described only by a functional characteristic, without any disclosed correlation between function and structure of the sequence, it is "not sufficient characteristic for written description purposes, even when accompanied by a method of obtaining the claimed sequence." MPEP 2163. The MPEP does state that for generic claim the genus can be adequately described if the disclosure presents a sufficient number of representative species that encompass the genus. MPEP 2163. If the genus has a substantial variance, the disclosure must describe a sufficient variety of species to reflect the variation within that genus. See MPEP 2163. Although the MPEP does not define what constitute a sufficient number of representative, the Courts have indicated what do not constitute a representative number species to adequately describe a broad generic. *In Gostelli*, the Court determined that the disclosure of two chemical compounds within a subgenus did not

describe that subgenus. *In re Gostelli*, 872 F.2d at 1012, 10 USPQ2d at 1618. In this case, there appears to be only a single isolated *E.coli* strain as the representative species which is not enough to support the generic claims.

The claims are drawn to a drawn to an isolated *Escherichia coli (E. coli)* having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, wherein said isolated *E. coli* does not contain genetic material of bacteriophage Wphi or Mu. The recitation of a, isolated *E. coli* does not contain genetic material of bacteriophage Wphi or Mu represents a partial structure. That is the claimed strains structure can vary greatly. There is no teaching of what other genetic material is required to maintain an at least 5% greater than the growth rate of *E. coli* MM294. Furthermore, there is no art-recognized correlation between having at least 5% greater than the growth rate of *E. coli* MM294 and not having bacteriophages Wphi or Mu. Consequently, there is no information about what genetic material is required to maintain the claimed growth rate. Therefore the written description is not commensurate in scope with the claims. Based on the lack of knowledge and predictability in the art, those of ordinary skill in the art would not conclude that the applicants was in possession of the claimed genus of *E. coli* strains based on the disclosure of the single species.

Moreover, the specification lack sufficient variety of species to reflect this variance in the genus since the specification does not provide any examples of such mutants. The written description requirement of the patent statute requires a description of an invention, not an indication of a result that one might achieve if one made that invention. *See In re Wilder*, 736 F.2d 1516, 1521, 222 USPQ 369, 372-73 (Fed. Cir. 1984) (affirming rejection because the specification does "little more than outlin[e] goals appellants hope the claimed invention achieves and the problems the invention will hopefully ameliorate."). Accordingly, it is deemed that the specification

fails to provide adequate written description for the genus of the claims and does not reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the entire scope of the claimed invention.

Vas-Cath Inc. V. Mahurkar, 19 USPQ2d 1111, clearly states that "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession *of the invention*. The invention is, for purposes of the 'written description' inquiry, *whatever is now claimed*." (See page 1117). The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." (*See Vas-Cath* at page 1116). The possible structural variations are limitless to any class of polymer with any biomolecule. It must not be forgotten that the MPEP states that if a biomolecule is described only by a functional characteristic, without any disclosed correlation between function and structure of the sequence, it is “not sufficient as a characteristic for written description purposes, even when accompanied by a method of obtaining the claimed sequence.” MPEP 2163.

Applicant is reminded that *Vas-Cath* makes clear that the written description provision of 35 USC 112 is severable from its enablement provision (see page 115). The skilled artisan cannot envision the detailed structure of the peptide fragments thereof, thus conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation**.** An adequate description requires more than a mere statement that it is part of the invention and a reference to a potential method of isolating it. Furthermore, *In The Reagents of the University of California v. Eli Lilly* (43 USPQ2d 1398-1412), the court held that a generic statement which defines a genus of by only their functional activity does not provide an adequate description of the genus. The court indicated that while Applicants are not

required to disclose every species encompassed by a genus, the description of a genus is achieved by the recitation of a representative number of molecules falling within the scope of the claimed genus.

In view of these considerations, a person skilled in the art would not have viewed the teachings of the specification sufficient to show that applicants were in possession of isolated *Escherichia coli (E. coli)* strains having a growth rate that is at least 5% greater than the growth rate of *E. coli* MM294, wherein said isolated *E. coli* does not contain genetic material of bacteriophage Wphi or Mu as instantly claimed. Therefore the full breadth of the claims fails to meet the written description provision of 35 USC 112, first paragraph.

Claim Objections

9. Claim 8 is objected to because of the following informalities: Claim 8 refers to “merA" however, it appears that the claim should recite “mcrA". See paragraphs [0015 and 0028]. Therefore appropriate correction is required.

Conclusion

10. No claims allowed.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ja-Na Hines whose telephone number is 571-272-0859. The examiner can normally be reached Monday thru Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Robert Mondesi, can be reached on 571-272-0956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/JaNa Hines/
Examiner, Art Unit 1645

/Mark Navarro/

Primary Examiner, Art Unit 1645